THE AMERICAN LOBSTER.[1]

THE work referred to below is "in a measure both a revision and an extension" of Prof. Herrick's well-known memoir on "The American Lobster," published in 1896 in the Bulletin of the United States Fish Commission, from which several figures, including three fine coloured plates of larval stages, are reproduced. By far the larger part of the memoir, however, is concerned with the new knowledge of the natural history of the lobster that has been gained during the past fifteen years from the investigations of the author himself and of many other naturalists on both sides of the Atlantic. As Prof. Herrick remarks, "in all probability there is no marine invertebrate in the world which is now better known," and he has rendered a great service to zoology by bringing together a vast amount of information on the habits and mode of life, the reproduction, development, and growth of the lobster, and on the economic and legislative problems relating to its preservation and artificial propagation. Out of the many points of interest discussed only a few can be selected for comment here.

The European and American lobsters are commonly regarded as distinct species of the genus Homarus, but they are very closely related, and, as Prof. Herrick remarks, they "might at first sight be considered as geographical varieties" of a single species. The only structural character which is given as distinguishing the two is the form of the rostrum, which in European lobsters is smooth on the underside, while in American specimens it usually bears a pair of small spines. According to Prof. Herrick, "either one, two, or three spines of inconstant size may be present," and he implies that they may occasionally be absent altogether in American lobsters. Slight differences are said to exist in the larvæ of the two forms, although the author scarcely seems to be justified in stating that the European lobster is hatched "in a stage nearly comparable to the second larva of the American lobster." Even if this were so, however, it would be by no means conclusive as to their specific distinctness, since other cases are known among Crustacea of species (*e.g.* the prawn *Palaemonetes varians*) which differ in their mode of development in different parts of their geographical range. As a mere matter of nomenclature the question is, of course, only of interest to the systematist, but in view of the temptation to fill in gaps in our knowledge of the bionomics of either form by data drawn from the other, it may be of more than merely academic interest to determine as exactly as possible the degree of affinity between them.

Prof. Herrick states of the European lobster that its range in the Mediterranean is limited on the east by the Adriatic Sea, and this agrees with statements in other works of authority. If it be correct, however, it is curious that the species should have been so well known to Aristotle, whose natural history studies were mainly carried on, as Prof. D'Arcy Thompson has recently told us, on the island of Mitylene.

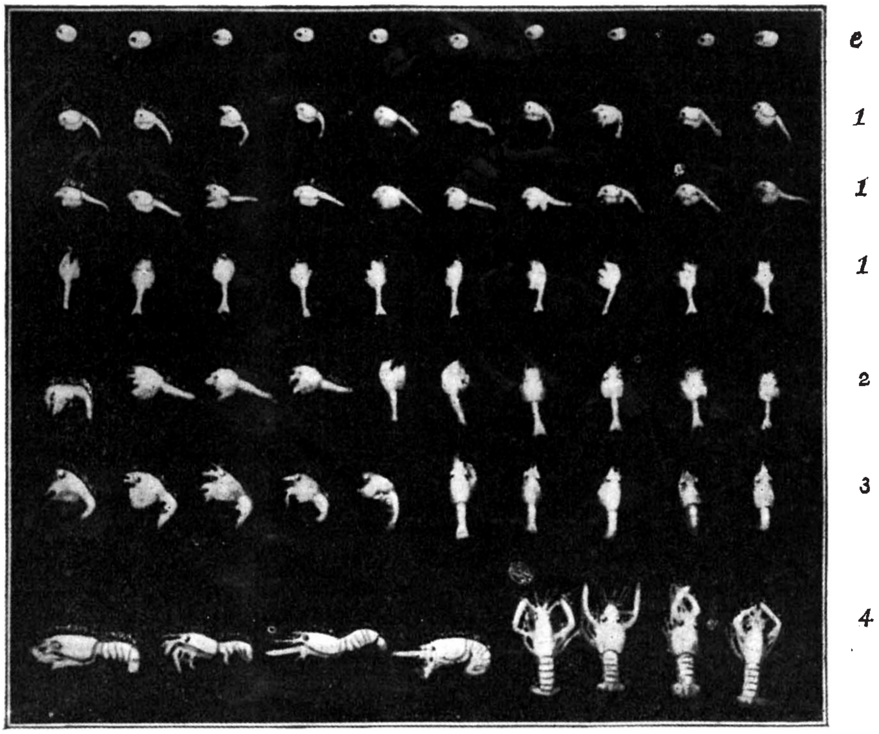


FIG. 1.—Growth stages of young lobsters: *e*, embryo at hatching (July); 1 (first line), first larva, not free from first moult; 1 (second and third lines), first free larval stage; 2, second larva; 3, third larva; 4, fourth stage.

A detailed account is given of the structure and development of the great claws and of the process of autotomy and regeneration as affecting them. An interesting little piece of mechanism is described in the interlocking processes which strengthen the articulations between the basal segments of the limb. In the young lobster, in which the articulation between the second and third segments is movable, processes of this kind are developed on the adjacent margins of these segments. In later stages, however, the second and third segments become soldered together, the junction forming the "breaking plane" at which autotomy takes place, and a new process grows out from the third segment to interlock with one on the first. A full description is given of the torsion of the great claws by which the movable finger comes to lie on the inner side instead of on the upper and outer side as it does in the

---

[1] "Natural History of the American Lobster." By F. H. Herrick. Bulletin of the Bureau of Fisheries, vol. xxix., pp. 149–408, pls. xxviii–xlvii. (Washington, 1911.)

© 1912 Nature Publishing Group

two following pairs of legs. The observation of this torsion, however, is not quite novel, for it was briefly but accurately described by Boas in his well-known (but apparently little read) "Studier over Decapodernes Slægtskabsforhold" (Vidensk. Selsk. Skrifter, Kjøbenhavn, 1880). The periodic arrangement of the teeth on the fingers of the great claws is described, and it is shown to arise in a very simple way by the successive appearance of new sets of teeth between those already existing. Reference is made to Stahr's fantastic opinion "that the æsthetic sense of this self-admiring crustacean is aroused as its eye wanders over the dentate margin of its 'hand.'"

The habits and reactions of the larvæ are dealt with at some length, and many interesting facts are recorded in connection with their swimming movements, food (and occasional cannibalism), colour, and power of colour-change. Even their psychology is not neglected, for it is stated that the "instinct of fear" becomes apparent only at the fourth stage, when the little lobster prepares to give up its free-swimming life and to seek shelter on the bottom.

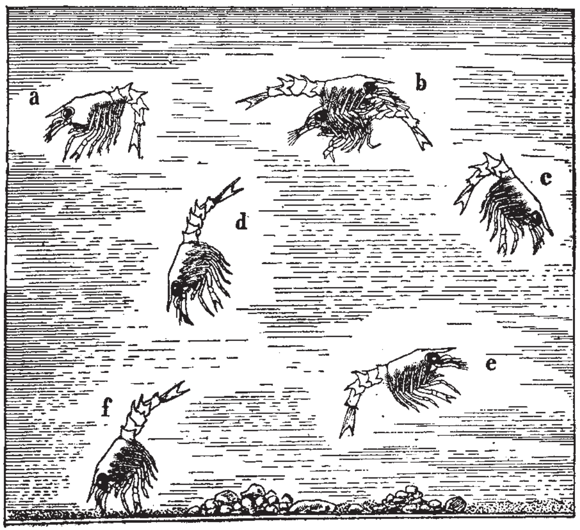


FIG. 2.—Swimming attitudes of young lobsters in the first free stages *a*, body bent in usual quadrant form; *b*, lobster swimming astride the carcase of another and devouring it; *c*, thoracic legs directed forward; *d*, rising position occasionally assumed; *e*, "floating" position; *f*, too weak to rise.

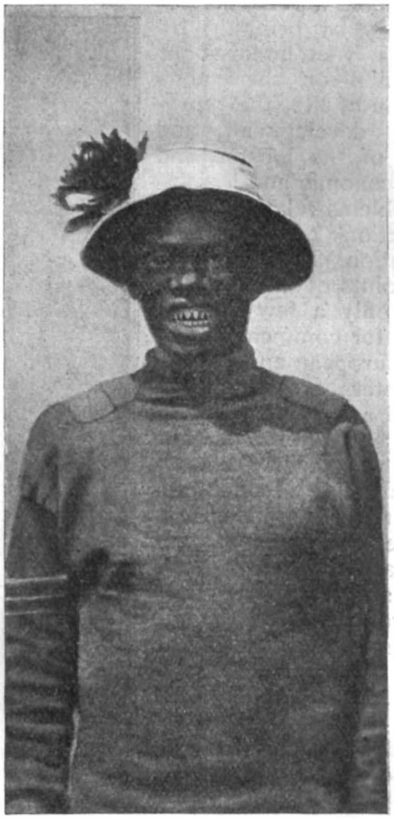
Prof. Herrick's remarks on the subjects of protective legislation and artificial hatching of lobsters are worthy of close attention. He strongly advocates the view that a minimum size-limit, such as most lobster-fishing countries have adopted, is ineffective on account of the fact that the smaller lobsters, which alone are protected, are vastly less fertile than the larger individuals. Some striking statistics are given to show the futility of artificial hatching unless the young lobsters are reared through the critical pelagic stages before they are set free.

As is usual with publications of the United States Government departments, the style of printing and illustration forms a pleasing contrast to that of most official publications in this country.

W. T. C.

SCIENTIFIC RESEARCH IN THE SUDAN.[1]

IN reviewing the third report of the Wellcome Research Laboratories (NATURE, June 24, 1909), we suggested that it would be advisable to separate the purely medical subjects from those dealing with agricultural or economic questions and matters of general scientific interest. This has been effected in the fourth report, and we now have two volumes, A, Medical, B, General Science, but the change is accompanied by at least one drawback, viz., that each of the separate volumes is now as large as its parent, and in addition we have a still bulkier review of the literature.



Copyright. From Fourth Report
Wellcome Tropical Research Laboratories, Khartoum.

FIG. 1.—Sharpened teeth as practised by the Nyam-nyam.

If we may unburden ourself at once of initial criticism, it is that these volumes are too bulky. This, we believe, is not entirely due to the number of subjects included, but in part to the diffuse style in which many of the articles are written, and the desire to impart elementary information—a praiseworthy desire, but one we think perhaps out of place in reports dealing with researches. The articles would, in our opinion, be improved by severe pruning. We suspect that there are certain considerations which prevent this, but for

---

[1] Fourth Report of the Wellcome Tropical Research Laboratories at the Gordon Memorial College, Khartoum, Dr. Andrew Balfour, Director. Vol. A, Medical, pp. 404+xxiii plates+118 figs. Price 21*s*. net Vol. B, General Science, pp. 333. Price 18*s*. net. Supplement to the Fourth Report, pp 448. Price 15*s*. net. (London: Published for the Department of Education, Sudan Government, Khartoum, by Baillière, Tindall and Cox, 1911.)

© 1912 Nature Publishing Group